ANDREW T. BUCCILLI

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Experience

- **University of Alabama** Tuscaloosa, AL
  Graduate Research Assistant *May 2013 - Dec 2018*
  - **Big data analysis**: Ph.D. research as member of 4000+ person CMS Collaboration at the CERN LHC analyzing PBs of data recorded by the CMS detector
  - **Collaboration**: Member of 5 statistical analysis teams searching for new physics and manager of a new 3 year long project, leading the analysis to publication (see, doi:10.1103/PhysRevD.98.092001)
  - **Data reduction**: Wrote dedicated analysis packages for reducing data to GBs on remote computing clusters distributed across a worldwide HPC grid
  - **Signal optimization**: Improved (photon) particle identification by up to 50% in analysis region over standard procedure
  - **Background rejection**: Reduced fake signals to percent level by tuning custom tagging algorithms in samples produced from Monte Carlo simulation
  - **Data interpretation**: Applied Bayesian inference to set limits on new theory according to data
- **European Organization for Nuclear Research (CERN)** Geneva, Switzerland
  Graduate Research Assistant / On-site Lab User *Jan 2016 - Aug 2017*
  - **Detector operations**: Regular 24/7 on-call expert for the CMS detector responsible for promptly addressing problems with flexibility and coordinating activity during daily meetings
  - **Detector performance**: Utilized a data analysis to synchronize all 3500 new detector readout channels for production use in 2016 and 2017

Education

- **Ph.D., Experimental Particle Physics,** The University of Alabama, Tuscaloosa, AL, May 2019
  Dissertation: *"Search for Signatures of Large Extra Dimensions in High-Mass Diphoton Events from Proton-Proton Collisions at $\sqrt{s} = 13$ TeV with CMS"*
  Advisor: Prof. Conor Henderson
- **M.S., Physics,** The University of Alabama, Tuscaloosa, AL, May 2016
- **B.S., Mathematics,** Michigan Technological University, Houghton, MI, April 2011

Skills

- **Computing**: C++, Python, bash, git, LaTeX, SQL, HTML, Unix, Jupyter notebook, Mathematica, Matlab, Excel VBA
- **Libraries**: STL, NumPy, SciPy, scikit-learn, pandas, Matplotlib, CERN ROOT
- **General**: Collaborative and independent research, data analysis, programming, machine learning, effective technical and non-technical communication, writing publications, public presentations, project management, leadership, teaching, mentoring, graduate-level physics and mathematics
- **Language**: English (native), Chinese (beginner: ∼HSK3), French (basic)